

REMARKS

In response to the Office Action mailed April 27, 2005, Applicants respectfully request reconsideration. To further the prosecution of this Application, Applicants submit the following remarks, have canceled claims and have added new claims. The claims as now presented are believed to be in allowable condition.

Claims 1-26 were pending in this Application. By this Amendment, claims 6, 13 and 20 have been canceled. Claims 27-34 have been added. Accordingly, claims 1-5, 7-12, 14-19 and 21-34 are now pending in this Application. Claims 1, 8, 15, 22, 23 and 26 are independent claims.

Objection to the Specification

The Specification was objected to due to a minor informality. Applicants have amended the Specification to cure this informality. No new matter has been added. Accordingly, the objection to the Specification should be withdrawn.

Allowed Claims

Claims 22 and 26 have been allowed.

Claims 4, 11, 18 and 25 were objected to as being dependent on a rejected base claim but were deemed allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Applicants reserve the right to amend the claims as described above but will refrain from doing so until Applicants receive a reply to Applicants' request for reconsideration of certain claims.

Rejections under §102 and §103

Claims 1-3, 5-8, 9, 10, 12, 15, 16, 17, 19, 23 and 24 were rejected under 35 U.S.C. §102(a) as being anticipated by U.S. Patent No. 6,549,410 (Cohen). Claims 6, 7, 13, 14, 20 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Cohen.

Applicants respectfully traverse the rejections of claims 6, 13 and 20 and request reconsideration. These claims are in allowable condition. In order to further the prosecution of this Application, Applicants have amended independent claim 1 to include all of the limitations of claim 6 (thus effectively placing claim 6 in independent form), and have canceled claim 6. Similarly, Applicants have amended independent claim 8 to include all of the limitations of claim 13 (thus effectively placing claim 13 in independent form), and have canceled claim 13. Furthermore, Applicants have amended independent claim 15 to include all of the limitations of claim 20 (thus effectively placing claim 20 in independent form), and have canceled claim 20. Accordingly, Applicants have not amended claims 1, 8 and 15 in a manner that would require further searching and/or consideration. Applicants will now set forth the reasons why the invention as recited in the claims patentably distinguish over the cited prior art.

Cohen discloses a mounting arrangement for a heatsink 50 (column 3, lines 56-57 and Fig. 1). Biasing means, or coil springs 12, is located between a heatsink upper lip 31 and a heatsink plate 28 (column 4, lines 60-61). The springs 12 are pressed slightly and such construction damps any relative movement between a chassis member 24 and the heatsink 50, and more importantly provides a significantly stronger attachment point for the heatsink 50 than known methods of attaching the heatsink 50 directly to the motherboard (column 4, line 61 through column 5, line 3). Another possible embodiment is one where the biasing means is in the form of a unitary leaf spring such as a square shaped leaf spring (column 5, lines 29-31).

Claims 1-3 and 5-7

As mentioned above, in order to further the prosecution of this Application, Applicants have amended independent claim 1 to include all of the limitations of claim 6. Accordingly, Applicants have not amended claim 1 in a manner that would require further searching and/or consideration.

Claim 1, as amended, is directed to a heat sink attachment mechanism which includes a fastener having a head portion and a shaft portion. The head portion is configured to generate a stress on a heat sink to secure the heat sink with a circuit board component and the shaft portion having a flange substantially perpendicular to a long axis defined by the shaft portion. The flange is configured to abut a surface of a circuit board carrying the circuit board component when the fastener secures the heat sink to the circuit board component. The heat sink attachment mechanism further includes a compressible member in communication with the shaft portion of the fastener and configured to orient between the head portion and the heat sink. The compressible member has a diameter configured to expand when the head portion compresses the compressible member and generates the stress on the heat sink when the fastener secures the heat sink to the circuit board component. The compressible member comprises a compliant elastomeric material.

The cited prior art does not teach or suggest a heat sink attachment mechanism which includes a compressible member comprising compliant elastomeric material, as recited in claim 1. Rather, Cohen discloses a mounting arrangement for a heatsink 50 which uses coil springs 12 as a biasing means (e.g., see column 4, lines 60-61 and Fig. 1 of Cohen).

The Office Action states on page 8 that Cohen discloses a compressible member except for comprising a compliant elastomeric material. Applicants agree, i.e. Cohen does not disclose any compressible member comprising compliant elastomeric material.

However, the Office Action then, at the bottom of page 8, (i) states that notice is taken of the fact that compliant elastomeric materials were known in the cooling art for their good extension and retraction properties at the time the invention was made, and (ii) contends that it would have been obvious to one having ordinary skill in the cooling art at the time the invention was made to use elastomeric materials for making the compressible member of Cohen in order to

provide the member with good extension and retraction properties. Applicants respectfully disagree.

In order to establish a *prima facie* case of obviousness, the Office Action must meet three criteria.

“First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.”¹

In connection with the rejection, there is no suggestion or motivation, either in the reference itself (i.e., Cohen) or the knowledge generally available to one of ordinary skill in the art, to modify the reference. Specifically, Cohen does not mention any need for the Cohen biasing means to use either compliant elastomeric materials or for the Cohen biasing means to have good extension and retraction properties (as apparently asserted by the Office Action).

Moreover, there is no reasonable expectation of success as required for a *prima facie* case of obviousness. In particular, if one were to make the Cohen springs 12 comprise compliant elastomeric material, the Cohen springs 12 would no longer function properly. Specifically, the Cohen springs 12 are pressed slightly and such construction damps any relative movement between a chassis member 24 and the heatsink 50, and more importantly provides a significantly stronger attachment point for the heatsink 50 than known methods of attaching the heatsink 50 directly to the motherboard (e.g., see column 4, line 61 through column 5, line 3 of Cohen). If anything, making the Cohen springs 12 comprise compliant elastomeric material would seemingly destroy the springing operation of the Cohen springs 12.

¹

In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

For the reasons stated above, claim 1 patentably distinguishes over the cited prior art, and the rejection of claim 1 under 35 U.S.C. §103(a) should be withdrawn. Accordingly, claim 1 is in allowable condition.

Because claims 2-3, 5 and 7 depend from and further limit claim 1, claims 2-3, 5 and 7 are in allowable condition for at least the same reasons.

Claims 8-10 and 12-14

As mentioned above, in order to further the prosecution of this Application, Applicants have amended independent claim 8 to include all of the limitations of claim 13. Accordingly, Applicants have not amended claim 8 in a manner that would require further searching and/or consideration.

Claim 8, as amended, is directed to a heat sink apparatus for cooling a circuit board component mounted to a circuit board. The heat sink apparatus includes a heat sink and a heat sink attachment mechanism which is similar to that described above in connection with claim 1. In particular, the heat sink attachment mechanism has a compressible member comprising a compliant elastomeric material.

Accordingly, claim 8 patentably distinguishes over the cited prior art for at least the same reasons as claim 1. Thus, claim 8 is in allowable condition, and the rejection of claim 8 under 35 U.S.C. §103(a) should be withdrawn.

Because claims 9-10, 12 and 14 depend from and further limit claim 8, claims 9-10, 12 and 14 are in allowable condition for at least the same reasons.

Claims 15-17 and 19-21

As mentioned above, in order to further the prosecution of this Application, Applicants have amended independent claim 15 to include all of the limitations of claim 20. Accordingly, Applicants have not amended claim 15 in a manner that would require further searching and/or consideration.

Claim 15, as amended, is directed to a circuit board assembly which includes a circuit board and a circuit board component mounted to the circuit

board. The circuit board assembly further includes a heat sink apparatus for cooling the circuit board component. The heat sink apparatus includes a heat sink and a heat sink attachment mechanism. The heat sink apparatus includes a heat sink and a heat sink attachment mechanism which is similar to that described above in connection with claim 1. In particular, the heat sink attachment mechanism has a compressible member comprising a compliant elastomeric material.

Accordingly, claim 15 patentably distinguishes over the cited prior art for at least the same reasons as claim 1. Thus, claim 15 is in allowable condition, and the rejection of claim 15 under 35 U.S.C. §103(a) should be withdrawn.

Because claims 16-17, 19 and 21 depend from and further limit claim 15, claims 16-17, 19 and 21 are in allowable condition for at least the same reasons.

Claims 23-24

Claim 23, as amended is directed to a method for assembling a circuit board assembly. The method includes placing a heat sink in communication with a circuit board component. The circuit board component is coupled to a circuit board. The method further includes securing the heat sink to the circuit board component using a heat sink attachment mechanism. The heat sink attachment mechanism has a fastener having a head portion and a shaft portion. The shaft portion defining a long axis and having a flange substantially perpendicular to the long axis of the shaft portion and the heat sink attachment mechanism having a compressible member in communication with the shaft portion, the head portion, and the heat sink. The method further includes causing the flange of the shaft portion to abut a surface of the circuit board, and causing the head portion to compress the compressible member of the heat sink attachment mechanism and expand an outer diameter of the compressible member. The compressible member comprises a compliant elastomeric material.

As mentioned above in connection with claim 1, Cohen does not teach or suggest use of any heat sink attachment mechanism having a compressible

member comprising a compliant elastomeric material. Accordingly, claim 23 patentably distinguishes over the cited prior art for at least the same reasons as claim 1. Thus, claim 23 is in allowable condition, and the rejection of claim 23 under 35 U.S.C. §103(a) should be withdrawn.

Because claim 24 depends from and further limits claim 23, claim 24 is in allowable condition for at least the same reasons.

Newly Added Claims

Claims 27-34 have been added and are believed to be in allowable condition. Claims 27-28 depend from claim 1. Claims 29-30 depend from claim 8. Claims 31-32 depend from claim 15. Claims 33-34 depend from claim 23. Support for claims 27-34 is provided within the Specification, for example, on page 11, line 3 through page 14, line 23. No new matter has been added.

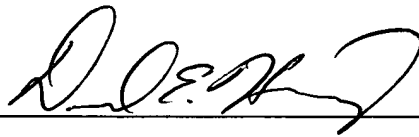
Conclusion

In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this affect is respectfully requested. If the Examiner believes, after this Amendment, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicants' Representative at the number below.

Applicants hereby petition for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this Amendment, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-0901.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 366-9600, in Westborough, Massachusetts.

Respectfully submitted,



David E. Huang, Esq.
Attorney for Applicant(s)
Registration No.: 39,229
CHAPIN & HUANG, L.L.C.
Westborough Office Park
1700 West Park Drive
Westborough, Massachusetts 01581
Telephone: (508) 366-9600
Facsimile: (508) 616-9805

Attorney Docket No.: CIS03-27(7227)

Dated: July 27, 2005